

REMARKS

As amended, the Applicant submits that all rejections have been overcome and the present application is now in condition for allowance. The foregoing amendments and the following remarks are responsive to the Office Action mailed June 1, 2001. Applicant respectfully requests entry of the submitted amendment and reconsideration of the present application as amended. As amended, claims 1-22 are present in the application. Claims 1-4, 9, 11, and 22 have been amended. No new matter has been added. The claims have been amended to clarify the invention, and are not regarded as necessary to distinguish the invention over the cited art. However, arguments responsive to the Office Action regarding the propriety of the rejections are presented with respect to the amended claims, without regard to propriety of the rejection(s) of the un-amended claims.

Specification

The abstract of the disclosure is objected to because it does not meet the required minimum of 50 words. The specification has been amended, and as amended is believed to no longer be subject to the objection.

Claim Objections

Claims 11 and 22 are objected to because of informalities. These claims have been amended, and as amended are believed to no longer be subject to these objections.

Rejection over Yamaguchi et al. under 35 U.S.C. § 102(b)

Claim 1 is rejected under 35 U.S.C. § 102(b) as anticipated by *Yamaguchi et al.* (US PAT. 5,365,535), hereinafter *Yamaguchi*. Applicant respectfully traverses the rejection for the reasons that follow. Applicant respectfully submits that Claim 1 is neither taught nor anticipated by *Yamaguchi* as *Yamaguchi* does not teach the invention claimed in claim 1.

More specifically, with respect to claim 1, Applicant submits that *Yamaguchi* does not teach an optical recording system having:

“an objective lens positioned relative to said first array and second array of modulatable light sources such that said objective lens is capable of focusing at least one light beam from each of said first array and said second array of modulatable light sources on a target medium.”

Yamaguchi teaches an optical recording/playback system using two heads, one for recording, one for playback (Col. 30, lines 46-51). Further, each head uses a separate objective lens to focus light. In Figure 27, objective lens 561 focuses light from the recording head 522, and objective lens 553b focuses light from the second optical head 523 (Col. 35, lines 53-60, Col. 36, lines 4-7). As such, because *Yamaguchi* teaches each optical head having a separate objective lens, *Yamaguchi* does not teach an objective lens capable of focusing at least one light beam from a first array and a second array of modulatable light sources, as in claim 1. As a result, *Yamaguchi* does not anticipate claim 1.

Rejection over Jewell et al. under 35 U.S.C. § 102(b)

Claims 1-5 and 7-10 are rejected under 35 U.S.C. § 102(b) as being anticipated by *Jewell et al.* (US PAT. 5,526,182), hereinafter *Jewell*. Applicant

respectfully traverses the rejections for the reasons that follow. Applicant respectfully submits that Claims 1-5 and 7-10 are neither taught nor anticipated by *Jewell* as *Jewell* does not teach the inventions claimed in claims 1-5 and 7-10.

More specifically, with respect to claim 1, Applicant submits that *Jewell* does not teach an optical recording system comprising “a first array of modulatable light sources” and “a second array of modulatable light sources.” Rather, *Jewell* teaches a system having a single array of lasers (Col. 7, lines 7-8). Therefore, *Jewell* does not anticipate claim 1. Further, claims 2-5 and 7-10 depend upon claim 1, and therefore include all the elements of claim 1. As such, *Jewell* also does not anticipate claims 2-5 and 7-10.

Rejection over Jewell et al. under 35 U.S.C. § 103(a)

Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over *Jewell et al.* However, as Applicant understands the obviousness rejection, it is based upon the anticipation rejection of claim 1 in view of *Jewell*. As illustrated above, claim 1 is not anticipated by *Jewell*. Moreover, no showing has been made that claim 1 as amended is obvious over *Jewell*.

Therefore, *Jewell* cannot render obvious Applicant's invention as claimed in claim 6, and Applicant respectfully requests the withdrawal of the rejection of the claim under 35 U.S.C. § 103(a) over the combination.

Rejection over Jewell et al. in view of Yamaguchi et al.

under 35 U.S.C. § 103(a)

Claims 11-19 and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Jewell* in view of *Yamaguchi*.

Applicant respectfully traverses the rejections as the combination neither teaches nor discloses the invention as claimed in claims 11 and 22. The arguments above with respect to the anticipation rejection over *Yamaguchi* also apply to this obviousness rejection. Thus, with respect to claim 11, the combination does not teach or disclose “an objective lens located in an optical path of each of said first and second VCSEL arrays, wherein said objective lens is capable of focusing at least one light beam from each of said first and second VCSEL arrays on a target medium.”

Further, with respect to claim 22, for the same reasons, the combination does not teach or disclose “a plurality of light beams from each of said writing VCSEL array and said reading VCSEL array “ and “an achromatic objective lens positioned to receive said light beams upon said light beams exiting said circularly polarizing plate, wherein said objective lens is capable of focusing said light beams on a target medium.”

Thus, for the reasons stated above with respect to claim 1, the claims 11 and 22 are patentable over *Jewell* in view of *Yamaguchi*.

Also, with respect to claims 12 and 22, *Jewell* suggests that the system taught by *Jewell* cannot be used to both read and write. Rather *Jewell* suggests that the system may be configured for either purpose, but does not suggest that

a single device may be created to do both (Col. 2, lines 8-10, 15-21, 27-29, Col. 6, lines 41-53). As such, *Jewell* not only does not suggest a combination with *Yamaguchi*, but indeed teaches away from such a combination.

As a result, for the reasons above respecting claims 12 and 22, *Jewell* teaches away from a combination with *Yamaguchi*, and therefore claims 12 and 22 are patentable over *Jewell* in view of *Yamaguchi*.

Additionally, Applicant respectfully traverses the rejection because the combination does not teach or disclose the invention as claimed in claims 12-19. As Applicant understands the rejection, the obviousness rejection of claims 12-19 depends on the obviousness rejection of claim 11. However, as illustrated above, claim 11 is patentable over *Jewell* in view of *Yamaguchi*.

Therefore, the combination cannot render obvious Applicant's invention as claimed in claims 12-19, and Applicant respectfully requests the withdrawal of the rejection of the claims under 35 U.S.C. § 103(a) over the combination.

Rejection over *Jewell et al.* in view of *Yamaguchi et al.* in further view of *Hayashi et al.* under 35 U.S.C. § 103(a)

Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Jewell* in view of *Yamaguchi* in further view of *Hayashi et al.* (US PAT. 5,703,856).

Applicant respectfully traverses the rejection because the combination does not teach or disclose the invention as claimed in claims 20 and 21. As Applicant understands the rejection, the obviousness rejection of claims 20 and 21 depends on

the obviousness rejection of claim 11 in view of *Jewell* in view of *Yamaguchi*. However, as illustrated above, claim 11 is patentable over *Jewell* in view of *Yamaguchi*.

Therefore, the combination cannot render obvious Applicant's invention as claimed in claims 20 and 21, and Applicant respectfully requests the withdrawal of the rejection of the claims under 35 U.S.C. § 103(a) over the combination.

Condition for Allowance

Applicant submits that all rejections have been overcome and the present application is now in condition for allowance. If the Examiner has any questions or comments, the Applicant respectfully requests that the Examiner contact the undersigned by telephone.

Deposit Account Authorization and Extension of Time Request

Please charge any shortages and credit any overages to Deposit Account No. 02-2666, including any funds necessitated due to insufficient funds for an accompanying check. Any necessary extension of time for response not already requested is hereby requested. Please charge any corresponding fee to Deposit Account No. 02-2666.

Respectfully submitted,

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MARKED-UP VERSION OF AMENDMENTS

Added words are underlined, deleted words are bracketed.

IN THE SPECIFICATION

Please replace the first paragraph of text on page 13 with the following:

A multi-beam optical recording system having an array of light sources, such as Vertical Cavity Surface Emitting Lasers (VCSEL), oriented to the direction of motion of an optically sensitive recording medium such that each light source forms a separate written track. In another embodiment, a multi-beam optical recording system having a first array and a second array of light sources, such as VCSELs, oriented so that an objective lens focuses the output from each of the arrays in the direction of an optically sensitive recording medium. In a further embodiment, the first array of light sources may be an optical recording array, and the second array of light source may be an optical playback array.

IN THE CLAIMS

1. (Amended) An optical recording system comprising:
[an] a first array of modulatable light sources; [and]
a second array of modulatable light sources; and
an objective lens positioned relative to said first array and said second array of modulatable light sources such that said objective lens is capable of focusing at least one light beam from each of said first array and said second [said] array of modulatable light sources on a target medium.
2. (Amended) The optical recording system of claim 1 wherein said first array of modulatable light sources comprises a[n] first array of Vertical Cavity Surface Emitting Lasers (VCSEL) and said second array of modulatable light sources comprises a second array of VCSELs.
3. (Amended) The optical recording system of claim 2 wherein said first and said second VCSEL arrays [is] are embedded in a substrate.
4. (Amended) The optical recording system of claim 3 wherein each VCSEL of said first and said second VCSEL array is capable of writing a separate track on said target medium.

5. (Unchanged) The optical recording system of claim 1 wherein said modulatable light sources are spaced at regular intervals.
6. (Unchanged) The optical recording system of claim 5 wherein said regular intervals comprise center-to-center distances of at least approximately 40 microns.
7. (Unchanged) The optical recording system of claim 1 wherein said array of modulatable light sources comprises at least one line of modulatable light sources positioned at an angle relative to a direction of movement of said target medium.
8. (Unchanged) The optical recording system of claim 7 wherein each modulatable light source of said at least one line of modulatable light sources is associated with a separate path on said target medium.
9. (Amended) The optical recording system of claim 1 further comprising:
a polarizing beam-splitter located between said first and said second array of modulatable light sources and said objective lens; and
a circularly polarizing element located adjacent said polarizing beam-splitter.
10. (Unchanged) The optical recording system of claim 9 wherein said circularly polarizing element comprises a quarter wave plate.
11. (Amended) An optical recording system comprising:

a first array of Vertical Cavity Surface Emitting Lasers (VCSEL);
a second array of VCSEL; and
an objective lens located in an optical path of each of said first and second VCSEL arrays, wherein said objective lens is capable of focusing at least one light beam from each of said first and second VCSEL arrays on a target medium.

12. (Unchanged) The optical recording system of claim 11 wherein said first VCSEL array comprises a writing array and said second VCSEL array comprises a reading array.

13. (Unchanged) The optical recording system of claim 12 wherein said first VCSEL array comprises a plurality of individually modulatable light sources and said second VCSEL array comprises a plurality of continuously operable light sources.

14. (Unchanged) The optical recording system of claim 12 wherein:
said first VCSEL array is capable of emitting a plurality of light beams having a first wavelength;
said second VCSEL array is capable of emitting a plurality of light beams having a second wavelength different from said first wavelength; and
said objective lens is achromatic.

15. (Unchanged) The optical recording system of claim 12 wherein each VCSEL of said first VCSEL array is capable of writing a separate track on said target medium.

16. (Unchanged) The optical recording system of claim 15 wherein said first VCSEL array is positioned at an angle relative to a direction of movement of said target medium.

17. (Unchanged) The optical recording system of claim 11 wherein said first and second VCSEL arrays are located on separate substrates.

18. (Unchanged) The optical recording system of claim 11 wherein said first and second VCSEL arrays are located on a common substrate.

19. (Unchanged) The optical recording system of claim 11 wherein said first and second VCSEL arrays have the same array spacing.

20. (Unchanged) The optical recording system of claim 12 further comprising:
a first polarizing beam-splitter located between said first VCSEL array and said objective lens;
a second polarizing beam-splitter located between said first polarizing beam-splitter and said objective lens; and
a circularly polarizing plate located adjacent said second polarizing beam-splitter.

21. (Unchanged) The optical recording system of claim 20 wherein said first polarizing beam-splitter comprises a dichroic polarizing beam-splitter.

22. (Amended) An optical recording system comprising:

- a writing array of Vertical Cavity Surface Emitting Lasers (VCSEL);
- a reading array of VCSEL;
- a dichroic polarizing beam-splitter positioned to receive a plurality of light beams from each of said writing VCSEL array and said reading VCSEL array;
- a polarizing beam-splitter positioned to receive said light beams upon said light beams exiting said dichroic polarizing beam-splitter;
- a circularly polarizing plate coupled to an exit face of said polarizing beam-splitter;
- an achromatic objective lens positioned to receive said light beams upon said light beams exiting said circularly polarizing plate, wherein said objective lens is capable of focusing said light beams on a target medium;
- at least one adjustment device coupled to said objective lens to adjust a position of said objective lens;
- a detection system positioned to receive said light beams upon said light beams reflecting from said target medium, said detection system capable of providing data to control said at least one adjustment device.